State of Kansas
Department of Labor
Boiler Safety Unit

Electronic Data Submission Guidelines

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Document History

Date	Action / Change
19 Mar 2007	Document Created
19 June 2007	Revisions to Appendix B tables: • Changed layout to landscape to accommodate additional columns. • Added "Description" and "Required" column in Appendix B tables. • Added table for Insurance Inventory to Appendix B. • Simplified data type column values and lengths. • Added link for valid values for BoilerPressure field (table added to Appendix C) and deficiency codes (Appendix D).
06 July 2007	Added comment to Appendix B table regarding submission of multiple deficiency codes per inspection record. Revisions to the following Appendix C tables: • List 2: Type • List 3: Use • List 4: Fuel
23 July 2007	Added "COS" option to Appendix C List 7 (cross-reference *Submission Types* section) for change of status reporting.

Intended Audience

This document is provided for all boiler inspection agencies who wish to transmit inspection reports and insurance inventories electronically to the State of Kansas.

Introduction

The State of Kansas Department of Labor's Boiler Safety Unit is now offering the opportunity for boiler inspection agencies to submit inspection reports (including object change of status notices) and object inventory snapshots.

The accepted format for the data file is XML. This allows for pre-validation prior to submission by the inspection agencies, is a common industry format for exchanging data, and allows for the definition of fields, data types, and acceptable ranges of lookup values.

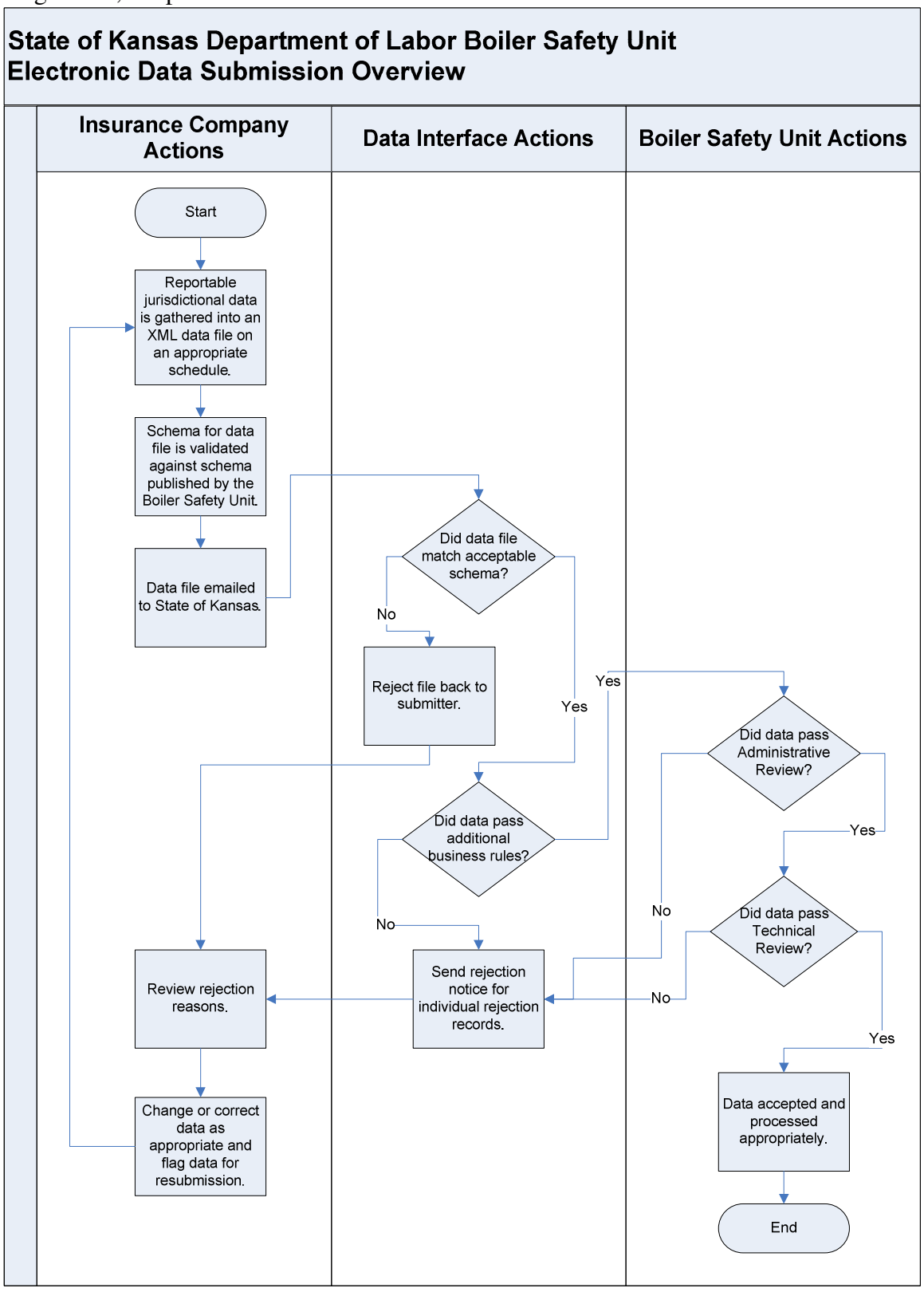
Submission Types

The following types of transactions are supported by this electronic interface:

- Inspection reports on new or active objects. Note that change of insurance or change of status actions may be inherent in the submission of an inspection report on an object that was formerly at a different status or was in the inventory of another inspection agency.
- Change of Status reports where the object is no longer active. These are reported in the same file as the Inspection Reports with an *InspectionType* of "COS" and *Status* other than "Active".
- Insurance Inventories (or Snapshots) are used to synchronize insurance responsibility for objects in the jurisdictional database.

Process Overview

At a high level, the process is as follows:



Inspection Agency Actions - Inspection Submission
Inspection agencies create an XML file containing inspection reports (including object change of status reports) or an XML file containing object insurance inventory snapshots for objects in the jurisdiction. Inspection Reports and change of status reports should be submitted weekly, and an object inventory snapshot should be submitted monthly.
The schema of the XML data file is validated pre-submission.
The XML data file is emailed to **BoilerDataSubmission@dol.ks.gov**.
Interface Actions
Inspection Reports/Change of Status Reports: Basic XML and data validation takes place. Rejections are reported back to the authoritative email address for the source of the data. Emailed rejection reports will include a link to view the detailed information about the rejected items.
Insurance Inventory Records: Insurance is added or dropped per the records in this file. A Summary Report of actions taken on the records in the file is emailed back to the submitter.
Boiler Safety Unit Actions
If necessary, the record is subject to Administrative Review by the Boiler Safety Unit. Rejections are reported back to the authoritative email address for the source of the data. Emailed rejection reports will include a link to view detailed information about the rejected items. If accepted by Administrative Review, changes are applied to the data.
If accepted by Administrative Review, inspection records are now subject to Technical Review. Rejections are reported back to the authoritative email address for the source of the data. Emailed rejection reports will include a link to view detailed information about the rejected items.
If accepted by Technical Review, ordinary jurisdictional processes begin. These include, but are not limited to: invoicing applicable fees, distributing deficiency resolution information to the customer, and printing and distributing certificates when appropriate.
Potential Additional Inspection Agency Actions
If an entire file or a single transaction is rejected via the email notification process, information should be corrected and resubmitted with the next XML file.

Registration for Submission of Electronic Data

Inspection agencies must register with the State of Kansas prior to submitting electronic data. This will allow the Boiler Safety Unit to have communication information on file should any issues arise that require more urgent attention that can be conveyed in an email. It will also allow the submitting inspection agency to configure the email communications that result from the submissions and rejections. Electronic inspection reports will only be accepted for Registered Agencies who have performed an initial test and implementation phase to validate the submission format and process.

As part of the registration process, the State of Kansas will provide a copy of the records in a Microsoft Excel file from the jurisdictional database for the registering inspection agency. This will allow the inspection company to review and reconcile some of the data differences between the jurisdiction and the inspection company data. The inspection agency will return the Excel file to the jurisdiction, upon which the jurisdiction will attempt to modify insurance

responsibility and object statuses to reflect the returned data. A Summary Report will be created and sent back to the registering inspection agency.

Logins do not need to be created as they are NOT necessary to submit data or review rejections. An email address from the inspection agency is required for distributing summary reports and notifications of rejection information.

Submission

The inspection agency creates an XML file that may include one or more inspection reports (including change of status notices) or an XML file that includes an object inventory for the submitting agency. The XML file should adhere to the schema published at **http://www.dol.ks.gov/safety/HTML/ws_datasubmission.html**.

The inspection agency should use the XML Validation Tool available for download from the State of Kansas Department of Labor web site **http://www.dol.ks.gov/safety/HTML/ws_datasubmission.html**.to confirm the XML schema of the file prior to submission.

The data file should be emailed (inspections and change of status – weekly; object insurance inventory – monthly) to **BoilerDataSubmission@dol.ks.gov** with a subject line of "Electronic Data Submission".

Validation

XML Schema Validation

Validation takes place on several levels. The first of these is the validation of the XML schema of the data file submitted. This initial validation ensures the submission includes all required data and conforms to the rules of the import process (correct object types, uses, units, ranges of values, etc.).

Failure at this point will result in the rejection of the entire file and an email notification.

Note: This applies to both the Inspection/Change of Status file and the Insurance Inventory file.

Basic Object Validation

The KS number and object category (boiler vs. pressure vessel) is validated for all existing objects in the data file. Additional information such as year built, National Board number (or serial number) and manufacturer are also used to ensure that the agency's transaction will be attached to the correct jurisdictional object.

Objects with a jurisdiction number of "NEW" do not go through this validation step.

If the object is not found or the data does not match the Boiler Safety Unit's database, the individual inspection/change of status record is queued for rejection.

Note: This applies only to the Inspection/Change of Status file. The KS number is the only piece of information from the Insurance Inventory file used to identify objects. Individual record rejections do not apply to Insurance Inventory file processing.

Object/Location Validation

This phase determines if the object reported is at the correct location. The address submitted is standardized and compared to the object's location in the Boiler Safety Unit's database.

Records with a potential match are queued for Administrative Review, and then are allowed to proceed to the next stage. Records with an exact match proceed to the next process stage.

Note: This applies only to the Inspection/Change of Status file.

Detailed Object/Inspection Validation

The checks in this validation process determine if secondary object information is correct and applies various business rules. These include, but are not limited to: validating the inspector's commission (for inspection reports), confirming of the status of the object, checking for duplicate inspections, checking for the expected insurer, and checking for violation/deficiency statuses if a certificate is requested.

Inspection records passing all validation are imported into the Boiler Safety Unit's database and are queued for Technical Review by the Chief State Boiler Inspector or his designee.

Object or inspection records that fail any of the advanced rule checks are queued for Administrative Review.

Note: This applies only to the Inspection/Change of Status file.

Administrative Review

Boiler Safety Unit staff review the imported records that were not rejected but did not cleanly pass all the validation checks. Resolving issues with these records may involve communication with the inspector or the submitting agency.

Approved inspection records are imported into the Boiler Safety Unit's database and queued for Technical Review by the Chief State Boiler Inspector or his designee.

Unresolved records are queued for rejection back to the submitting agency along with a reason for the rejection. The rejection notice will include a link to view the rejected data online.

Note: This applies only to the Inspection/Change of Status file.

Technical Review

The Chief State Boiler Inspector or his designee conducts a review of the inspection report records to be sure that it is acceptable under additional conditions such as legislated requirements found in the Kansas Boiler Safety Act KSA 44-913 et.seq. AND Rules and Regulations. For

your convenience, these rules and regulations can be found online at **http://www.dol.ks.gov/safety/html/ws_boilerSafetyLaws.html**.

Records passing Technical Review flow through the system and are handled appropriately based on the type of submission.

Records that cannot be resolved will be queued for rejection to be handled by the jurisdictional staff and the submitting agency.

Note: This applies only to the Inspection/Change of Status file.

Rejections/Exceptions

It is important to address and resolve rejections or exceptions as soon as possible to avoid overlapping of inspections between the responsibilities of the State and Inspection Agency or create additional rejections based on chronologically-dependent data (e.g. – inspection reports from former insurer and current insurer).

To minimize email communications, a daily record of unreported records that were queued for rejection is created and an email sent to the submitting agency. The inspection agency will be able to specify the maximum number of rejection records per email as part of their registration. This email will include a unique identifier for the rejection batch and a link for the user to view the records rejected and the reasons for rejection.

Communication Plan for Reporting Changes

It is the responsibility of the submitting agency to ensure their data file conforms to the published XML Schema. To assist in the prevalidation of a submission, a schema validation tool is made available at **http://www.dol.ks.gov/safety/html/ws_datasubmission.html**.The schema file will be updated to reflect any legislated changes (new fields or object types), newly accepted lookup values, removed lookup values, new ranges of acceptable data, etc.

An announcement of upcoming changes that affect the electronic data submission will be distributed in writing (on paper or via email) by an authorized State of Kansas Department of Labor Boiler Safety Unit employee to all registered Electronic Data Submission organizations. Included in this announcement will be the effective date of the change.

Reporting Object Deficiencies

Deficiencies will be reported using a code number, found in Appendix D – Deficiency Table, a condition observed or description of the deficiency, and a requirement for the user to resolve the deficiency. Please refer to the published XML schema for additional information.

Appendix A – Registration Form

State of Kansas
Department of Labor
Boiler Safety Unit
Electronic Data Submission Registration Form

Inspection Agency Information (to be completed by Inspection Agency)			
Name & Address			
Contact Person Name and Phone #			
Email Information (to be completed by Inspection Agency)			
Email Address (for Summary Reports and Rejection Notifications)			
Maximum # of Rejected Records Per Email			
Testing And Implementation Schedule (to be coordinated between Jurisdiction and Inspection Agency)			
Step #	**Description**	**Date Started**	**Date Completed**
1	Data Reconciliation		
2	Testing Inspection Report Submission		
3	Test Insurance Inventory Snapshot Submission		
Acceptance/Authority To Proceed to Production Environment			
Authority	**Signature**		**Date**
State of Kansas			
Inspection Agency			

Appendix B – Data Feeds and Fields

Inspection Report / Change of Status Notice							
Category	**BLR / PV**	**Field Name**	**XML Field Name**	**Description**	**Data Type**	**Length**	**Required**
Location Data	Both	Owner Name	OwnerName	Name of the owner of the business. May be an individual or a company. Can be left blank if it is the same as the User information.	Char	100	
	Both	Owner Address	OwnerAddress	Address of the owner of the business. Can be left blank if it is the same as the User information.	Char	50	
	Both	Owner City	OwnerCity	City of the owner of the business. Can be left blank if it is the same as the User information.	Char	50	
	Both	Owner State	OwnerState	State of the owner of the business. Can be left blank if it is the same as the User information.	Char	2	
	Both	Owner Zip	OwnerZip	Zip code of the owner of the business. Zip+4 with a hyphen is accepted (ex. 12345-6789). Can be left blank if it is the same as the User information.	Char	10	
	Both	User Name	UserName	Name of the business where the object is used	Char	50	Yes
	Both	User Address	UserAddress	Address of the business where the object is used. No PO Boxes please.	Char	50	Yes
	Both	User City	UserCity	City of the business where the object is used.	Char	50	Yes
	Both	User State	UserState	State of the business where the object is used. Should be “KS”.	Char	2	Yes
	Both	User Zip	UserZip	Zip code of the business where the object is used.	Char	10	Yes

				Zip+4 with a hyphen is accepted (ex. 12345-6789)			
	Both	Object County	ObjectCounty	County of the business where the object is used.	Char	25	Yes
	Both	Mailing Address	MailingAddress	Address where certificates and other communications should be mailed. Can be left blank if it is the same as the User information.	Char	50	
	Both	Mailing City	MailingCity	City where certificates and other communications should be mailed. Can be left blank if it is the same as the User information.	Char	50	
	Both	Mailing State	MailingState	State where certificates and other communications should be mailed. Can be left blank if it is the same as the User information.	Char	2	
	Both	Mailing Zip	MailingZip	Zip code where certificates and other communications should be mailed. Zip+4 with a hyphen is accepted (ex. 12345-6789). Can be left blank if it is the same as the User information.	Char	10	
Object Data	Both	Cert Exp Date	CertExpiration	The new certificate expiration date that should be effective as a result of this inspection. Is the same as the current cert expiration date if this is a non-certificate inspection.	Date (yyyy-mm-dd)	10	Yes
	Both	Jurisdiction Number	JurisdictionNumber	KS number, including any suffix such as “H” or “U”. If this is a new object, use the word “NEW”.	Char	12	Yes
	Both	Certificate Duration (mo)	CertDuration	Frequency of certificate inspections for this type of object, reported in months. Values would be 12 for	Int	3	Yes

				annual, 36 for every three years, or 999 for objects with a one-time certificate inspection (ex. PVs).			
	Both	National Board #	NBNumber	National Board number posted on the object. Note that this may be blank for cast iron boilers. All objects should have either a National Board number OR a serial number.	Char	50	
	Both	Serial #	SerialNumber	Serial number, model number or other identifying information posted on the object. All objects should have data in either the National Board number OR serial number fields.	Char	50	
	Both	Status	Status	Is the object active, inactive, scrapped, etc? See list for potential values.	Lookup (Char) List 1: Status	10	Yes
	Both	Specific Location in Plant	LocationInPlant	Where is the boiler found at the location? Examples: Boiler Room #1, Basement, Mechanical Room.	Char	50	
	Both	Manufacturer	Manufacturer	Manufacturer of the object.	Char	100	Yes
	Both	Type	Type	What type of object is this? See list for potential values.	Lookup (Char) List 2: Type	100	Yes
	Both	Use	Use	What is this object used for? See list for potential values.	Lookup (Char) List 3: Use	100	Yes
	Boiler	Fuel	Fuel	What fuel is used in this fired object? See list for potential values.	Lookup (Char) List 4: Fuel	100	For Boilers Only
	Both	Year Built	YearBuilt	When was this object built? Use four digits when reporting year built.	Int	10	Yes

	Both	MAWP	MAWP	What is the maximum allowable working pressure posted on this object?	Int	10	Yes
	Both	S/SRV1 Size (in)	SV1Size	What is the size, in inches, of the safety or safety relief valve on this object? Note that this value may include a decimal point.	Float	8	
	Both	S/SRV2 Size (in)	SV2Size	What is the size, in inches, of a secondary safety or safety relief valve on the object, if a second relief valve exists? Note that this value may include a decimal point.	Float	8	
	Both	S/SRV3 Size (in)	SV3Size	What is the size, in inches, of a tertiary safety or safety relief valve on the object, if a third relief valve exists? Note that this value may include a decimal point.	Float	8	
	Boiler	BTU/HR-LBS/HR	BTUH	What is the capacity of the object in either BTU/HR or LBS/HR? Note that this value may include a decimal point.	Float	8	For Boilers Only
	Boiler	Unit/HR Type	HRUnitType	Which unit was used for reporting the capacity provided in the BTU/HR-LBS/HR field? See list for potential values.	Lookup (Char) List 5: HR Unit Type	100	For Boilers Only
	Boiler	Heating Surface	HeatingSurface	What is the heating surface of the boiler, in square feet, if applicable? Note that this value may include a decimal point.	Float	8	
	Both	Gallons	Gallons	What is the number of gallons that a hot water supply boiler (hot water heater), hot water storage	Int	8	

				water heater or pressure vessel, in gallons, has on its nameplate?			
	Both	Cu. Ft.	CuFt	What is the volume of this object, in cubic feet, if applicable?	Int	8	
	Boiler	CI Sections	CISections	How many cast iron sections are in this boiler?	Int	8	
	PV	Length (in)	PVLength	What is the length, in inches, of the pressure vessel?	Int	8	
	PV	Diameter (in)	PVDiameter	What is the diameter, in inches, of the pressure vessel?	Int	8	
	Boiler	Manhole Installed	ManholeInstalled	Does this boiler have a manhole? Values can be submitted as the string "true" or "false".	Boolean (true/false)	5	For Boilers Only
	Boiler	Method of Firing	MethodOfFiring	Is this an atmospheric or power burner or how is this boiler fired? See list for potential values.	Lookup (Char) List 6: Method Of Firing	100	
	Boiler	Boiler Pressure	BoilerPressure	Is this a high or low pressure boiler as defined by the statutes of the State of Kansas? Note that low pressure boilers will have a suffix of "H" in the jurisdiction number. See list for potential values.	Lookup (Char) List 9: Boiler Pressure	15	For Boilers Only
Inspection Data	Both	Date Inspected	InspectionDate	The date the inspector conducted the inspection.	Date (yyyy-mm-dd)	10	Yes
	Both	Inspection Type	InspectionType	Typically this will be either an internal or external inspection. See list for potential values.	Lookup (Char) List 7: Inspection Type	100	Yes
	Both	Issue Cert.	IssueCert	Is the conditions such that a certificate may be issued? This applies only	Boolean (true/false)	5	Yes

				to certificate inspections and should be “false” otherwise.			
	Both	Certificate Inspection	CertificateInspection	Is this inspection for the purpose of renewing a certificate for this object? Values may be “true” or “false”.	Boolean (true/false)	5	Yes
	Both	Received By	ReceivedBy	What is the name, employer and phone number of the person on site with whom the inspection results were discussed?	Char	100	Yes
	Both	Inspector Name	InspectorName	The inspector conducting the inspection.	Char	50	Yes
	Both	Inspector Commission #	InspectorCommNumber	The inspector’s Kansas commission number as printed on the commission card.	Char	25	Yes
	Both	Inspector NB #	InspectorNBNumber	The inspector’s National Board number.	Char	25	Yes
	Both	Pressure Allowed	PressureAllowedThis	The maximum pressure that this object is allowed to operate at based on the current configuration and conditions.	Int	10	Yes
	Both	S/SRV1 Set At	SV1SetAt	The observed set point or reading for the first safety / safety relief valve.	Int	7	Yes
	Both	S/SRV2 Set At	SV2SetAt	The observed set point or reading for the second safety / safety relief valve, if applicable.	Int	7	
	Both	S/SRV3 Set At	SV3SetAt	The observed set point or reading for the third safety / safety relief valve, if applicable.	Int	7	
	Both	S/SRV1 Capacity	SV1Capacity	The relieving capacity of the first safety / safety relief valve.	Int	10	Yes

	Both	S/SRV2 Capacity	SV2Capacity	The relieving capacity of the second safety / safety relief valve, if applicable.	Int	10	
	Both	S/SRV3 Capacity	SV3Capacity	The relieving capacity of the third safety / safety relief valve, if applicable.	Int	10	
	Both	S/SRV Type	SVCapUnits	The unit of measurement applicable to the safety / safety relief valve capacity measurements. Typically it is "BTU/HR" or "LBS/HR". See list for potential values.	Lookup (Char) List 8: SV Cap Units	10	Yes
	Both	Tot SV Capacity	TotalSVCapacity	The total relieving capacity of all safety / safety relief valves or devices on the object. Note that this may include more than the three safety / safety relieve valves reported individually.	Int	9	
	Both	Inspection Comments	InspectionComments	Additional information to record about the inspection. This may include readings on additional safety valves beyond the first three, repairs or issues resolved during the inspection, etc.	Char	1000	
Additional Information	Both	Hydro Test?	HydroTest	Was a Hydro Test conducted recently? Values may be "true" or "false".	Boolean (true/false)	5	
	Both	Hydro Test Date	HydroTestDate	If a Hydro Test was conducted recently, when was it performed?	Date (yyyy-mm-dd)	10	
	Both	Hydro Pressure	HydroPressure	If a Hydro Test was conducted recently, what pressure was observed?	Int	10	
	Both	Deficiency Code #	code_number	Maps to common conditions and deficiencies observed.	Lookup (Char) (See Appendix D)	10	Required if deficiency

				The list is based on categories found on the National Board Violation Findings report. Zero to unlimited sets of code_number, code_condition and code_requirements can be included in a single inspection report. See the KS XML Schema file for more details.			reported
	Both	Deficiency Condition	code_condition	The condition observed that is deficient.	Char	3800	
	Both	Deficiency Requirement	code_requirement	A description of the work that must be done to correct the deficiency. This information is often given to a repair company or someone not present at the time of the actual inspection.	Char	3800	Required if deficiency reported

Insurance Inventory / Snapshot						
Blr/PV	**Field Name**	**XML Field Name**	**Description**	**Data Type**	**Length**	**Required**
Both	Jurisdiction Number	JurisdictionNumber	KS number, including any suffix such as “H” or “U”	Char	12	Yes
Both	User Name	LocationName	Name of the business where the object is used	Char	50	Yes
Both	User Address	LocationAddress	Address of the business where the object is used. No PO Boxes please.	Char	50	Yes
Both	User City	LocationCity	City of the business where the object is used	Char	50	Yes
Both	User State	LocationState	State of the business where the object is used. Should be “KS”.	Char	2	Yes
Both	User Zip	LocationZip	Zip code of the business where the object is used. Zip+4 with a hyphen is accepted (ex. 12345-6789)	Char	10	Yes

Appendix C – Lookup Tables

List 1: Status

Category	Status Description
Both	Active
Both	Inactive
Both	New
Both	Scrapped

List 2: Type

Category	Type Description
Boiler	Cast Alum
Boiler	Cast Iron
Boiler	Chemical Recovery
Boiler	CI Section
Boiler	Coil
Boiler	Economizer
Boiler	Electric Boiler
Boiler	Electric Steam Generator
Boiler	Fire Tube
Boiler	Fired Storage Water Heater
Boiler	Hot Water Generator
Boiler	Ht. Recov. Stm. Gen.
Boiler	Jacketed Steam Kettle
Boiler	Other
Boiler	Vertical Fire Tube Boiler
Boiler	Waste Heat Boiler
Boiler	Water Tube
PV	Air Conditioning System
PV	Air Dryer
PV	Air Receiver
PV	Air Tank
PV	Air/Oil Separator
PV	Ammonia Storage Tank
PV	Argon Tank
PV	Blowdown Tank
PV	Carbon Dioxide
PV	Cold Water Tank
PV	Deaerator Tank
PV	Filter Vessel
PV	Freon Tank
PV	Heat Exchanger
PV	Heat Transfer

PV	Hot Water Tank
PV	Hydrogen Storage Tank
PV	Jacketed Steam Kettle
PV	Liq. Natural Gas Tank
PV	Liquid Propane Gas
PV	Nitrogen Tank
PV	Other
PV	Other Storage Tank
PV	Oxygen Tank
PV	Refrigeration System
PV	Unfired
PV	Water Tank

List 3: Use

Category	Use Description
Boiler	Cooker
Boiler	Humidity Control
Boiler	Hot Oil Boiler
Boiler	Hot Water Heat
Boiler	Hot Water Supply
Boiler	Other
Boiler	Pool Heater
Boiler	Power
Boiler	Process
Boiler	Steam Heat
PV	Accumulator
PV	Autoclave
PV	Condenser
PV	Cooker
PV	Cooler
PV	Deaerator
PV	Heat Exchanger
PV	Humidity Control
PV	Hot Water Heat
PV	Hot Water Supply
PV	Hot Water Storage
PV	Intercooler
PV	Other
PV	Separator
PV	Storage

List 4: Fuel

Category	Fuel Description
Boiler	Alcohol

Boiler	Bagasse
Boiler	Butane
Boiler	Coal
Boiler	Coal & Gas
Boiler	Coke
Boiler	Electric
Boiler	Fuel Not Used
Boiler	Gas
Boiler	Heavy Oil
Boiler	Hydrogen
Boiler	Kerosene
Boiler	Landfill Gas
Boiler	LP
Boiler	Methane
Boiler	Natural Gas
Boiler	Oil
Boiler	Oil & Coal
Boiler	Oil & Gas
Boiler	Other
Boiler	Other Combination
Boiler	Process Gas
Boiler	Propane
Boiler	Pulverized Coal
Boiler	Refinery Gas
Boiler	Sawdust
Boiler	Sewer Gas
Boiler	Sulfur
Boiler	Waste Heat
Boiler	Wood

List 5: HR Unit Type

Category	HR Unit Type Description
Boiler	BTU/HR
Boiler	LBS/HR

List 6: Method Of Firing

Category	Method of Firing Description
Boiler	Atmospheric Burner
Boiler	Electric
Boiler	Hand Fired
Boiler	Other
Boiler	Power Burner

List 7: Inspection Type

Category	Inspection Type Description
Both	Accident
Both	External
Both	Internal
Both	COS

List 8: SV Cap Units

Category	SV Capacity Unit Description
Both	BTU/HR
Both	CFM
Both	GPM
Both	LBS/HR

List 9: Boiler Pressure

Category	Boiler Pressure Description
Boiler	High Pressure
Boiler	Low Pressure

Appendix D – Deficiency Table

Category	Deficiency Code	National Board Category	Condition
Boiler	1.1.1	Boiler Controls-LWCO or Flow Switches	LWCO not installed
Boiler	1.1.2	Boiler Controls-LWCO or Flow Switches	Secondary LWCO not installed
Boiler	1.1.3	Boiler Controls-LWCO or Flow Switches	No manual reset
Boiler	1.1.4	Boiler Controls-LWCO or Flow Switches	Installed too high or too low on the boiler
Boiler	1.1.5	Boiler Controls-LWCO or Flow Switches	Blow down valve and line too small
Boiler	1.1.6	Boiler Controls-LWCO or Flow Switches	Blow down line not extended to a safe point of discharge
Boiler	1.1.7	Boiler Controls-LWCO or Flow Switches	Not shutting down boiler
Boiler	1.1.8	Boiler Controls-LWCO or Flow Switches	Secondary LWCO not locking out burner
Boiler	1.1.9	Boiler Controls-LWCO or Flow Switches	Float has dents
Boiler	1.1.10	Boiler Controls-LWCO or Flow Switches	Float is leaking
Boiler	1.1.11	Boiler Controls-LWCO or Flow Switches	Mercury in switches separated
Boiler	1.1.12	Boiler Controls-LWCO or Flow Switches	Mercury is discolored
Boiler	1.1.13	Boiler Controls-LWCO or Flow Switches	Leaks on bellows
Boiler	1.1.14	Boiler Controls-LWCO or Flow Switches	Feed water pump control inoperative or bypassed
Boiler	1.1.15	Boiler Controls-LWCO or Flow Switches	No crosses on lower or upper connections to boiler
Boiler	1.1.16	Boiler Controls-LWCO or Flow Switches	Under sized connections to boiler
Boiler	1.1.17	Boiler Controls-LWCO or Flow Switches	Under sized blow down line and valve
Boiler	1.1.18	Boiler Controls-LWCO or Flow Switches	Two LWCO on the same lower connection
Boiler	1.1.19	Boiler Controls-LWCO or Flow Switches	Float & switches are blocked closed so they will not open
Boiler	1.1.20	Boiler Controls-LWCO or Flow Switches	Lower connection on the boiler is has restricted flow do to scale
Boiler	1.1.21	Boiler Controls-LWCO	Flow switch not installed

Category	Deficiency Code	National Board Category	Condition
		or Flow Switches	
Boiler	1.1.22	Boiler Controls-LWCO or Flow Switches	Flow switch does not shut down boiler when circ pump is stopped
Boiler	1.1.23	Boiler Controls-LWCO or Flow Switches	Flow switch leaking
Boiler	1.1.24	Boiler Controls-LWCO or Flow Switches	Valve between the control and the boiler
Boiler	1.1.25	Boiler Controls-LWCO or Flow Switches	Low water cutoff pressure rating is too low
Boiler	1.1.26	Boiler Controls-LWCO or Flow Switches	No means of blowing down float chamber
Boiler	1.1.27	Boiler Controls-LWCO or Flow Switches	Blow down valve inoperative
Boiler	1.1.28	Boiler Controls-LWCO or Flow Switches	Alarm inoperative
Boiler	1.1.29	Boiler Controls-LWCO or Flow Switches	Float chamber full of sediment
Boiler	1.1.30	Boiler Controls-LWCO or Flow Switches	Covers missing on control
Boiler	1.1.31	Boiler Controls-LWCO or Flow Switches	CSD-1 requirements
Boiler	1.1.32	Boiler Controls-LWCO or Flow Switches	Installed with galvanized pipe and fittings
Boiler	1.1.33	Boiler Controls-LWCO or Flow Switches	Pipe and fittings do not meet required pressure rating
Boiler	1.1.34	Boiler Controls-LWCO or Flow Switches	Faulty electrical wiring
Boiler	1.1.99	Boiler Controls-LWCO or Flow Switches	Miscellaneous/Undefined
Boiler	1.2.1	Boiler Controls-Pressure Gage	Pressure gage missing
Boiler	1.2.2	Boiler Controls-Pressure Gage	No siphon or equivalent
Boiler	1.2.3	Boiler Controls-Pressure Gage	Out of calibration
Boiler	1.2.4	Boiler Controls-Pressure Gage	Inoperative
Boiler	1.2.5	Boiler Controls-Pressure Gage	Dial not large enough
Boiler	1.2.6	Boiler Controls-Pressure Gage	Pressure range not high enough
Boiler	1.2.7	Boiler Controls-Pressure Gage	Pressure range too high
Boiler	1.2.8	Boiler Controls-Pressure	Travel range of pointer not long enough

Category	Deficiency Code	National Board Category	Condition
		Gage	
Boiler	1.2.9	Boiler Controls-Pressure Gage	No shutoff valve on the gage
Boiler	1.2.10	Boiler Controls-Pressure Gage	Wrong type of shutoff valve on gage
Boiler	1.2.11	Boiler Controls-Pressure Gage	Glass missing on gage face
Boiler	1.2.12	Boiler Controls-Pressure Gage	Gage not visible
Boiler	1.2.13	Boiler Controls-Pressure Gage	Leaking
Boiler	1.2.99	Boiler Controls-Pressure Gage	Miscellaneous/Undefined
Boiler	1.3.1	Boiler Controls-Water Gage Glass	Gage glass dirty cannot see water level
Boiler	1.3.2	Boiler Controls-Water Gage Glass	Gage glass not visible from the floor
Boiler	1.3.3	Boiler Controls-Water Gage Glass	Gage glass leaking
Boiler	1.3.4	Boiler Controls-Water Gage Glass	Gage glass broken
Boiler	1.3.5	Boiler Controls-Water Gage Glass	Wrong type of gage glass
Boiler	1.3.6	Boiler Controls-Water Gage Glass	Guards missing or does not have guarding
Boiler	1.3.7	Boiler Controls-Water Gage Glass	Gage glass exposed to the weather
Boiler	1.3.8	Boiler Controls-Water Gage Glass	Drain missing or inoperative
Boiler	1.3.9	Boiler Controls-Water Gage Glass	Shutoff valves do not shutoff gage glass from boiler
Boiler	1.3.10	Boiler Controls-Water Gage Glass	Chain operators do not attached or do not allow valves to completely close
Boiler	1.3.11	Boiler Controls-Water Gage Glass	Remote level indicators do not function
Boiler	1.3.12	Boiler Controls-Water Gage Glass	Remote level indicators are burned into TV screen
Boiler	1.3.13	Boiler Controls-Water Gage Glass	Water level range is not indicated on the gage glass or the boiler/pressure vessel
Boiler	1.3.14	Boiler Controls-Water Gage Glass	Packing glands are leaking on gage glass
Boiler	1.3.15	Boiler Controls-Water Gage Glass	Packing glands are leaking on shutoff valves
Boiler	1.3.16	Boiler Controls-Water	Blow down valve inoperable

Category	Deficiency Code	National Board Category	Condition
		Gage Glass	
Boiler	1.3.99	Boiler Controls-Water Gage Glass	Miscellaneous/Undefined
Boiler	1.4.1	Boiler Controls-Pressure Controls	High limit pressure control missing
Boiler	1.4.2	Boiler Controls-Pressure Controls	High limit pressure control does not have a manual reset
Boiler	1.4.3	Boiler Controls-Pressure Controls	High limit control inoperable
Boiler	1.4.4	Boiler Controls-Pressure Controls	Operating control inoperable
Boiler	1.4.5	Boiler Controls-Pressure Controls	Pressure setting on control exceeds the MAWP of the vessel
Boiler	1.4.6	Boiler Controls-Pressure Controls	Pressure range of control exceeds the MAWP of the vessel
Boiler	1.4.7	Boiler Controls-Pressure Controls	Controls not set level
Boiler	1.4.8	Boiler Controls-Pressure Controls	Turn siphon parallel with control
Boiler	1.4.9	Boiler Controls-Pressure Controls	No siphon on pressure controls
Boiler	1.4.10	Boiler Controls-Pressure Controls	Control piping on pressure controls not large enough
Boiler	1.4.11	Boiler Controls-Pressure Controls	Valve between the boiler and the limit control
Boiler	1.4.12	Boiler Controls-Pressure Controls	Covers missing on controls
Boiler	1.4.99	Boiler Controls-Pressure Controls	Miscellaneous/Undefined
Boiler	1.5.1	Boiler Controls-Temperature Controls	High limit temperature control missing
Boiler	1.5.2	Boiler Controls-Temperature Controls	High limit temperature control does not have a manual reset
Boiler	1.5.3	Boiler Controls-Temperature Controls	High limit temperature control inoperable
Boiler	1.5.4	Boiler Controls-Temperature Controls	Operating temperature control inoperable
Boiler	1.5.5	Boiler Controls-Temperature Controls	Temperature setting on control exceeds the temperature of the vessel
Boiler	1.5.6	Boiler Controls-Temperature Controls	Temperature range of control exceeds the temperature of the vessel (no fixed stops)
Boiler	1.5.7	Boiler Controls-Temperature Controls	Temperature settings between the operating and high limit are too close together

Category	Deficiency Code	National Board Category	Condition
Boiler	1.5.7.1	Boiler Controls-Temperature Controls	Temperature controls not installed properly
Boiler	1.5.8	Boiler Controls-Temperature Controls	Too far away from the boiler
Boiler	1.5.9	Boiler Controls-Temperature Controls	Valve between the control and the boiler
Boiler	1.5.10	Boiler Controls-Temperature Controls	Covers missing on controls
Boiler	1.5.11	Boiler Controls-Temperature Controls	Temperature indicator missing or inoperable (thermometer)
Boiler	1.5.99	Boiler Controls-Temperature Controls	Miscellaneous/Undefined
Boiler	1.6.1	Boiler Controls-Unidentified Controls Viol	Emergency shut down switch missing
Boiler	1.6.1.2	Boiler Controls-Unidentified Controls Viol	Emergency shut down switch not labeled
Boiler	1.6.2	Boiler Controls-Unidentified Controls Viol	Thermometer missing on hot water supply boiler
Boiler	1.6.3	Boiler Controls-Unidentified Controls Viol	Thermometer installed to far away from the boiler
Boiler	1.6.4	Boiler Controls-Unidentified Controls Viol	Thermometer not installed in a well
Boiler	1.6.5	Boiler Controls-Unidentified Controls Viol	Lockable disconnect missing
Boiler	1.6.6	Boiler Controls-Unidentified Controls Viol	Shutoff Valve
Boiler	1.6.7	Boiler Controls-Unidentified Controls Viol	Electrical supply not hard wired to unit
Boiler	1.6.99	Boiler Controls-Unidentified Controls Viol	Miscellaneous/Undefined
Boiler	2.1.1	Boiler Piping Systems-Main Steam System	Non return valve missing
Boiler	2.1.2	Boiler Piping Systems-Main Steam System	Steam stop missing
Boiler	2.1.3	Boiler Piping Systems-	Drain valve missing between non-return

Category	Deficiency Code	National Board Category	Condition
		Main Steam System	and header valve
Boiler	2.1.4	Boiler Piping Systems-Main Steam System	Spool piece not stamped
Boiler	2.1.5	Boiler Piping Systems-Main Steam System	Boiler external piping does not meet B31.1 Power Piping Code
Boiler	2.1.6	Boiler Piping Systems-Main Steam System	Boiler piping does not meet ASME Section I Power Boiler Code
Boiler	2.1.7	Boiler Piping Systems-Main Steam System	Steam lines not properly supported
Boiler	2.1.8	Boiler Piping Systems-Main Steam System	Steam stops not accessible
Boiler	2.1.9	Boiler Piping Systems-Main Steam System	Piping does not meet pressure requirements
Boiler	2.1.10	Boiler Piping Systems-Main Steam System	Pipe fittings do not meet pressure requirements
Boiler	2.1.12	Boiler Piping Systems-Main Steam System	Valves do not meet pressure requirements
Boiler	2.1.13	Boiler Piping Systems-Main Steam System	Valve leaking by
Boiler	2.1.14	Boiler Piping Systems-Main Steam System	Packing leaking
Boiler	2.1.15	Boiler Piping Systems-Main Steam System	Valve will not close or open
Boiler	2.1.16	Boiler Piping Systems-Main Steam System	Flange leaking
Boiler	2.1.17	Boiler Piping Systems-Main Steam System	Threaded connections leaking
Boiler	2.1.99	Boiler Piping Systems-Main Steam System	Miscellaneous/Undefined
Boiler	2.2.1	Boiler Piping Sys-Btm Blow-Drain Syst	Pressure rating on valves does not meet pressure requirements
Boiler	2.2.2	Boiler Piping Sys-Btm Blow-Drain Syst	Pressure rating of discharge piping does not meet pressure requirements
Boiler	2.2.3	Boiler Piping Sys-Btm Blow-Drain Syst	Pressure rating of pipe fittings does not meet pressure requirements
Boiler	2.2.4	Boiler Piping Sys-Btm Blow-Drain Syst	Wrong type of fittings on blow down line and blow down discharge piping
Boiler	2.2.5	Boiler Piping Sys-Btm Blow-Drain Syst	Galvanized pipe and fittings used on the installation
Boiler	2.2.6	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down tank does not meet code reqs (not built to code or NB# not applied to vessel)
Boiler	2.2.7	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down tank cooling system not working

Category	Deficiency Code	National Board Category	Condition
Boiler	2.2.8	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down tank not large enough to handle boiler capacity
Boiler	2.2.9	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down from boiler discharges directly into floor drain
Boiler	2.2.10	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down valve missing on boiler
Boiler	2.2.11	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down valves installed wrong (quick & slow opening valves)
Boiler	2.2.12	Boiler Piping Sys-Btm Blow-Drain Syst	Wrong type of blow down valve
Boiler	2.2.13	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down valve leaking
Boiler	2.2.14	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down pipe size reduced
Boiler	2.2.15	Boiler Piping Sys-Btm Blow-Drain Syst	Blow down/drain valve missing
Boiler	2.2.16	Boiler Piping Sys-Btm Blow-Drain Syst	Automatic blow down valves installed on boiler
Boiler	2.2.17	Boiler Piping Sys-Btm Blow-Drain Syst	Valve wheel missing
Boiler	2.2.99	Boiler Piping Sys-Btm Blow-Drain Syst	Miscellaneous/Undefined
Boiler	2.3.1	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Stop and check valves missing
Boiler	2.3.2	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Stop and check valves installed in the wrong location
Boiler	2.3.3	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Back flow preventer missing, must be RPZ
Boiler	2.3.4	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Back flow preventer does not meet code requirements
Boiler	2.3.5	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Back flow preventer by passed
Boiler	2.3.6	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Back flow preventer installed on the wrong side of the pressure reducing valve
Boiler	2.3.7	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Back flow preventer installed more than five (5) feet above the floor
Boiler	2.3.8	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Condensate return tank vent line reduced
Boiler	2.3.9	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Condensate return tank leaking
Boiler	2.3.10	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Condensate return system steam traps leaking
Boiler	2.3.11	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Feed water pump leaking

Category	Deficiency Code	National Board Category	Condition
Boiler	2.3.12	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Vacuum pump and system not working
Boiler	2.3.13	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Chemical feed system not working
Boiler	2.3.14	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Oil or other contaminates in condensate return, feed water tank, or DA tank
Boiler	2.3.15	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Pressure reducing valve inoperative on make up water line
Boiler	2.3.16	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Galvanized pipe and fittings used on installation
Boiler	2.3.17	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Feed water regulator inoperative
Boiler	2.3.18	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Feed water piping and fittings do not meet pressure requirements
Boiler	2.3.99	Boiler Piping Sys-Feed Wtr,Cond/Rtn Sys	Miscellaneous/Undefined
Boiler	2.4.1	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Expansion tank is not built to code
Boiler	2.4.2	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Under sized expansion tank
Boiler	2.4.3	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Expansion tank water logged
Boiler	2.4.4	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Expansion tank gage glass dirty
Boiler	2.4.5	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Expansion tank gage glass missing
Boiler	2.4.6	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Expansion tank is leaking
Boiler	2.4.7	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Expansion tank not rated for system
Boiler	2.4.8	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Bladder type expansion tank not charged
Boiler	2.4.9	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Bladder type expansion tank bladder broken
Boiler	2.4.10	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Wrong type of expansion tank
Boiler	2.4.11	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Three way valve on heating system not working
Boiler	2.4.12	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Heating system valves leaking
Boiler	2.4.13	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Heating system piping leaking
Boiler	2.4.14	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Shutoff valve on heating system missing

Category	Deficiency Code	National Board Category	Condition
Boiler	2.4.15	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Safety relief valve on heating system under sized
Boiler	2.4.16	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Safety relief valve on heating system leaking
Boiler	2.4.17	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	No name plate on safety relief valve
Boiler	2.4.18	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Safety relief valve discharge not piped correctly
Boiler	2.4.19	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Steam line flanges leaking
Boiler	2.4.20	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Steam line leaking
Boiler	2.4.21	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Air eliminators on hot water heating system not working
Boiler	2.4.22	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Air eliminators leaking
Boiler	2.4.23	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Air eliminators missing on highest points of heating system
Boiler	2.4.24	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Isolation valves in heating system missing
Boiler	2.4.25	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Circulating pump leaking
Boiler	2.4.26	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Galvanized pipe and fittings used on installation
Boiler	2.4.27	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Drain valve inoperative
Boiler	2.4.99	Boiler Piping Sys-Exp Tank/Htg Sys Pipe	Miscellaneous/Undefined
Boiler	2.5.1	Boiler Piping Sys-Casing,Stack Breach, Flue	Casing corroded through
Boiler	2.5.2	Boiler Piping Sys-Casing,Stack Breach, Flue	Signs of over heating on casing
Boiler	2.5.3	Boiler Piping Sys-Casing,Stack Breach, Flue	Casing not secured to boiler
Boiler	2.5.4	Boiler Piping Sys-Casing,Stack Breach, Flue	Stack of the wrong material
Boiler	2.5.5	Boiler Piping Sys-Casing,Stack Breach, Flue	Stack or flue not sloped
Boiler	2.5.6	Boiler Piping Sys-	Rain cap missing from stack

Category	Deficiency Code	National Board Category	Condition
		Casing,Stack Breach, Flue	
Boiler	2.5.7	Boiler Piping Sys-Casing,Stack Breach, Flue	Holes in flue, stack, or chimney
Boiler	2.5.8	Boiler Piping Sys-Casing,Stack Breach, Flue	Unlined chimney
Boiler	2.5.9	Boiler Piping Sys-Casing,Stack Breach, Flue	Joints not sealed on stack
Boiler	2.5.10	Boiler Piping Sys-Casing,Stack Breach, Flue	Stack is not high enough
Boiler	2.5.11	Boiler Piping Sys-Casing,Stack Breach, Flue	Stack or flue discharges too close to a building opening
Boiler	2.5.12	Boiler Piping Sys-Casing,Stack Breach, Flue	Stack installed with out a thimble
Boiler	2.5.13	Boiler Piping Sys-Casing,Stack Breach, Flue	Stack installed too close to combustible material
Boiler	2.5.14	Boiler Piping Sys-Casing,Stack Breach, Flue	Flue piping must be enlarged where two or more are combined
Boiler	2.5.15	Boiler Piping Sys-Casing,Stack Breach, Flue	Mechanical and atmospheric or natural draft burners combined
Boiler	2.5.16	Boiler Piping Sys-Casing,Stack Breach, Flue	No stack thermometer on boiler
Boiler	2.5.17	Boiler Piping Sys-Casing,Stack Breach, Flue	Breaching pulled away from boiler
Boiler	2.5.18	Boiler Piping Sys-Casing,Stack Breach, Flue	Breaching pulled away from the stack
Boiler	2.5.19	Boiler Piping Sys-Casing,Stack Breach, Flue	Barometric damper out of adjustment or inoperative
Boiler	2.5.20	Boiler Piping Sys-Casing,Stack Breach, Flue	Excessive corrosion

Category	Deficiency Code	National Board Category	Condition
Boiler	2.5.21	Boiler Piping Sys-Casing,Stack Breach, Flue	Excessive soot build up
Boiler	2.5.22	Boiler Piping Sys-Casing,Stack Breach, Flue	Bottom of chimney has an accumulation of ash and debris
Boiler	2.5.23	Boiler Piping Sys-Casing,Stack Breach, Flue	Negative draft must be proven
Boiler	2.5.24	Boiler Piping Sys-Casing,Stack Breach, Flue	Positive draft must be proven
Boiler	2.5.25	Boiler Piping Sys-Casing,Stack Breach, Flue	Stack/flue has blockage
Boiler	2.5.99	Boiler Piping Sys-Casing,Stack Breach, Flue	Miscellaneous/Undefined
Boiler	2.6.26	Boiler Piping Sys-Burners & Fuel Supply Sys	Burner out of calibration boiler sooting up
Boiler	2.6.27	Boiler Piping Sys-Burners & Fuel Supply Sys	Burner out of calibration, too much excess air
Boiler	2.6.28	Boiler Piping Sys-Burners & Fuel Supply Sys	Air flow switch not working
Boiler	2.6.29	Boiler Piping Sys-Burners & Fuel Supply Sys	Programmer outdated/does not meet CSD-1 requirements for lockout
Boiler	2.6.30	Boiler Piping Sys-Burners & Fuel Supply Sys	Rebuilt programmer
Boiler	2.6.31	Boiler Piping Sys-Burners & Fuel Supply Sys	Programmer malfunction
Boiler	2.6.32	Boiler Piping Sys-Burners & Fuel Supply Sys	Wrong type of material used for gas line
Boiler	2.6.33	Boiler Piping Sys-Burners & Fuel Supply Sys	Gas/oil fuel train assembled with Teflon tape
Boiler	2.6.34	Boiler Piping Sys-Burners & Fuel Supply	Does not meet CSD-1 requirements

Category	Deficiency Code	National Board Category	Condition
		Sys	
Boiler	2.6.35	Boiler Piping Sys-Burners & Fuel Supply Sys	Required to have two safety shutoff valves
Boiler	2.6.36	Boiler Piping Sys-Burners & Fuel Supply Sys	Fixed handles missing off of the manual shut off valves
Boiler	2.6.37	Boiler Piping Sys-Burners & Fuel Supply Sys	Leak test connections missing
Boiler	2.6.38	Boiler Piping Sys-Burners & Fuel Supply Sys	Leak test connections in the wrong place
Boiler	2.6.39	Boiler Piping Sys-Burners & Fuel Supply Sys	Missing high and low gas pressure switches
Boiler	2.6.40	Boiler Piping Sys-Burners & Fuel Supply Sys	Gas pressure switches missing manual resets
Boiler	2.6.41	Boiler Piping Sys-Burners & Fuel Supply Sys	Gas pressure switches settings wrong (low 50 %, high 150 % of manifold pressure)
Boiler	2.6.42	Boiler Piping Sys-Burners & Fuel Supply Sys	Vent line from gas regulator not vented full size
Boiler	2.6.43	Boiler Piping Sys-Burners & Fuel Supply Sys	Vent lines from gas regulators and pressure switches not increased in size
Boiler	2.6.44	Boiler Piping Sys-Burners & Fuel Supply Sys	Vent lines terminate over the boiler room door
Boiler	2.6.45	Boiler Piping Sys-Burners & Fuel Supply Sys	Vent lines terminate next to the combustion air inlet
Boiler	2.6.46	Boiler Piping Sys-Burners & Fuel Supply Sys	Vent lines connected to high press regulator vent line
Boiler	2.6.47	Boiler Piping Sys-Burners & Fuel Supply Sys	Vent lines connected to bleed line (safety shutoff valves)
Boiler	2.6.48	Boiler Piping Sys-Burners & Fuel Supply Sys	Vent lines do not discharge at a safe point of discharge
Boiler	2.6.49	Boiler Piping Sys-	Vent lines are not turned down

Category	Deficiency Code	National Board Category	Condition
		Burners & Fuel Supply Sys	
Boiler	2.6.50	Boiler Piping Sys-Burners & Fuel Supply Sys	Vent lines-screens installed at discharge
Boiler	2.6.51	Boiler Piping Sys-Burners & Fuel Supply Sys	Fuel train drip legs are not accessible to remove pipe cap for cleaning
Boiler	2.6.52	Boiler Piping Sys-Burners & Fuel Supply Sys	Fuel train does not have an access to clean the drip leg
Boiler	2.6.53	Boiler Piping Sys-Burners & Fuel Supply Sys	Manual shutoff valves on fuel train hard to close or frozen open
Boiler	2.6.54	Boiler Piping Sys-Burners & Fuel Supply Sys	Only one safety shutoff valve on the oil fuel train
Boiler	2.6.55	Boiler Piping Sys-Burners & Fuel Supply Sys	Required pressure switches missing on fuel oil train
Boiler	2.6.56	Boiler Piping Sys-Burners & Fuel Supply Sys	Temperature control missing on fuel oil train
Boiler	2.6.57	Boiler Piping Sys-Burners & Fuel Supply Sys	Shutoff valves missing on oil lines
Boiler	2.6.58	Boiler Piping Sys-Burners & Fuel Supply Sys	Fuel oil strainer leaking
Boiler	2.6.59	Boiler Piping Sys-Burners & Fuel Supply Sys	Three way safety shutoff valve missing on fuel oil train
Boiler	2.6.60	Boiler Piping Sys-Burners & Fuel Supply Sys	Above ground fuel oil tank does not have a containment area for spills
Boiler	2.6.61	Boiler Piping Sys-Burners & Fuel Supply Sys	Combustion air opening not large enough
Boiler	2.6.62	Boiler Piping Sys-Burners & Fuel Supply Sys	Combustion air openings obstructed
Boiler	2.6.67	Boiler Piping Sys-Burners & Fuel Supply Sys	Combustion air openings screen is required to be ¼ inch mesh

Category	Deficiency Code	National Board Category	Condition
Boiler	2.6.68	Boiler Piping Sys-Burners & Fuel Supply Sys	Combustion air - two openings - ceiling and floor
Boiler	2.6.69	Boiler Piping Sys-Burners & Fuel Supply Sys	Motorized louvers require a proven open switch prior to start up that engages the louvers
Boiler	2.6.70	Boiler Piping Sys-Burners & Fuel Supply Sys	Motorized gas valve leaking fluid
Boiler	2.6.71	Boiler Piping Sys-Burners & Fuel Supply Sys	Gas meter located in boiler room
Boiler	2.6.72	Boiler Piping Sys-Burners & Fuel Supply Sys	Gas regulator diaphragm ruptured
Boiler	2.6.73	Boiler Piping Sys-Burners & Fuel Supply Sys	Control wiring improperly connected
Boiler	2.6.99	Boiler Piping Sys-Burners & Fuel Supply Sys	Miscellaneous/Undefined
Boiler	2.7.1	Boiler Piping Systems-Undefined	Piping and systems not covered in the codes or standards
Boiler	2.7.99	Boiler Piping Systems-Undefined	Miscellaneous/Undefined
Boiler	3.1.1	Manuf Data Report & Nameplate-No Data Report	Data report missing, not available upon installation
Boiler	3.1.99	Manuf Data Report & Nameplate-No Data Report	Miscellaneous/Undefined
Boiler	3.2.1	Manuf Data Rpt/Nameplate-Incorrect/Missing	Access to name plate on vessel is not in line with name plate
Boiler	3.2.99	Manuf Data Rpt/Nameplate-Incorrect/Missing	Miscellaneous/Undefined
Boiler	3.3.1	Manuf Data Report & Nameplate-Undefined	Data report does not list installation location
Boiler	3.3.2	Manuf Data Report & Nameplate-Undefined	Data report does not match name plate on vessel
Boiler	3.3.3	Manuf Data Report & Nameplate-Undefined	Non code boiler/pressure vessel
Boiler	3.3.99	Manuf Data Report &	Miscellaneous/Undefined

Category	Deficiency Code	National Board Category	Condition
		Nameplate-Undefined	
Boiler	4.1.1	Boiler Components-Water Leaks	Hand hole gaskets
Boiler	4.1.2	Boiler Components-Water Leaks	Man way gaskets
Boiler	4.1.3	Boiler Components-Water Leaks	Tubes
Boiler	4.1.4	Boiler Components-Water Leaks	Shell
Boiler	4.1.5	Boiler Components-Water Leaks	Tube sheet
Boiler	4.1.6	Boiler Components-Water Leaks	Flanges
Boiler	4.1.7	Boiler Components-Water Leaks	Threaded connections to boiler (nozzles)
Boiler	4.1.8	Boiler Components-Water Leaks	Cast iron sections
Boiler	4.1.9	Boiler Components-Water Leaks	Gaskets or push nipples leaking between sections
Boiler	4.1.10	Boiler Components-Water Leaks	Boiler external piping leaking
Boiler	4.1.11	Boiler Components-Water Leaks	Boiler external piping fittings leaking
Boiler	4.1.99	Boiler Components-Water Leaks	Miscellaneous/Undefined
Boiler	4.2.1	Boiler Components-Baffles and/or Refractory	Refractory deteriorating
Boiler	4.2.2	Boiler Components-Baffles and/or Refractory	Refractory cracking
Boiler	4.2.3	Boiler Components-Baffles and/or Refractory	Refractory falling off
Boiler	4.2.4	Boiler Components-Baffles and/or Refractory	Refractory missing
Boiler	4.2.5	Boiler Components-Baffles and/or Refractory	Baffles missing
Boiler	4.2.6	Boiler Components-Baffles and/or Refractory	Baffles cracked
Boiler	4.2.7	Boiler Components-Baffles and/or Refractory	Baffles falling out
Boiler	4.2.8	Boiler Components-Baffles and/or Refractory	Baffles out of place
Boiler	4.2.9	Boiler Components-Baffles and/or Refractory	Baffles warped
Boiler	4.2.99	Boiler Components-	Miscellaneous/Undefined

Category	Deficiency Code	National Board Category	Condition
		Baffles and/or Refractory	
Boiler	4.3.1	Boiler Components-Furnace and Fireside	Furnace tube leaking
Boiler	4.3.2	Boiler Components-Furnace and Fireside	Furnace tube cracked
Boiler	4.3.3	Boiler Components-Furnace and Fireside	Combustion chamber cracked
Boiler	4.3.4	Boiler Components-Furnace and Fireside	Deterioration of fireside surfaces
Boiler	4.3.5	Boiler Components-Furnace and Fireside	Soot blower misaligned
Boiler	4.3.6	Boiler Components-Furnace and Fireside	Fire box corrosion
Boiler	4.3.7	Boiler Components-Furnace and Fireside	Bulges in fire box
Boiler	4.3.8	Boiler Components-Furnace and Fireside	Tube sheet bulged
Boiler	4.3.9	Boiler Components-Furnace and Fireside	Tube sheet leaking
Boiler	4.3.10	Boiler Components-Furnace and Fireside	Cracked ligaments
Boiler	4.3.99	Boiler Components-Furnace and Fireside	Miscellaneous/Undefined
Boiler	4.4.1	Boiler Components-Waterside	Scale accumulation on steam drum
Boiler	4.4.2	Boiler Components-Waterside	Scale accumulation on mud drum
Boiler	4.4.3	Boiler Components-Waterside	Scale accumulation on tubes
Boiler	4.4.4	Boiler Components-Waterside	Scale accumulation on boiler shell
Boiler	4.4.5	Boiler Components-Waterside	Scale accumulation on tube sheets
Boiler	4.4.6	Boiler Components-Waterside	Broken stay bolts
Boiler	4.4.7	Boiler Components-Waterside	Deteriorated stay bolts
Boiler	4.4.8	Boiler Components-Waterside	Pitting on steam drum
Boiler	4.4.9	Boiler Components-Waterside	Pitting on mud drum
Boiler	4.4.10	Boiler Components-Waterside	Active corrosion on steam drum
Boiler	4.4.11	Boiler Components-	Active corrosion on mud drum

Category	Deficiency Code	National Board Category	Condition
		Waterside	
Boiler	4.4.12	Boiler Components-Waterside	OX pitting on steam drum
Boiler	4.4.13	Boiler Components-Waterside	OX pitting on mud drum
Boiler	4.4.14	Boiler Components-Waterside	OX pitting on tubes
Boiler	4.4.15	Boiler Components-Waterside	Sludge accumulation in mud drum
Boiler	4.4.16	Boiler Components-Waterside	Accumulation of oil on water sides
Boiler	4.4.17	Boiler Components-Waterside	Deterioration of hand hole openings
Boiler	4.4.18	Boiler Components-Waterside	Deterioration of man way openings
Boiler	4.4.99	Boiler Components-Waterside	Miscellaneous/Undefined
Boiler	4.5.1	Boiler Components-Superheaters	Corrosion
Boiler	4.5.2	Boiler Components-Superheaters	Damaged supports
Boiler	4.5.3	Boiler Components-Superheaters	Safety valve
Boiler	4.5.4	Boiler Components-Superheaters	Passages blocked
Boiler	4.5.99	Boiler Components-Superheaters	Miscellaneous/Undefined
Boiler	4.6.1	Boiler Components-Economizers	Sooted up
Boiler	4.6.2	Boiler Components-Economizers	Corrosion on tubes
Boiler	4.6.3	Boiler Components-Economizers	Passages blocked
Boiler	4.6.4	Boiler Components-Economizers	Supports damaged
Boiler	4.6.5	Boiler Components-Economizers	Casing leaking
Boiler	4.6.6	Boiler Components-Economizers	Safety relief valve
Boiler	4.6.7	Boiler Components-Economizers	Tubes leaking
Boiler	4.6.99	Boiler Components-Economizers	Miscellaneous/Undefined
Boiler	4.7.1	Boiler Components-	Clearance for operation, maintenance,

Category	Deficiency Code	National Board Category	Condition
		Installation	inspection, and repair.
Boiler	4.7.2	Boiler Components-Installation	Boiler installed on an uneven surface
Boiler	4.7.3	Boiler Components-Installation	Boiler supports
Boiler	4.7.4	Boiler Components-Installation	Bolts on boiler rear supports are too tight to allow for expansion
Boiler	4.7.99	Boiler Components-Installation	Miscellaneous/Undefined
Boiler	4.8.1	Boiler Components-Undefined Boilers	Non code boiler
Boiler	4.8.2	Boiler Components-Undefined Boilers	Name plate covered or unreadable
Boiler	4.8.99	Boiler Components-Undefined Boilers	Miscellaneous/Undefined
Boiler	4.9.1	Boiler Components-Material Condition	Pitting
Boiler	4.9.2	Boiler Components-Material Condition	Cracking
Boiler	4.9.3	Boiler Components-Material Condition	Corrosion
Boiler	4.9.4	Boiler Components-Material Condition	Undefined material
Boiler	4.9.5	Boiler Components-Material Condition	Laminations
Boiler	4.9.99	Boiler Components-Material Condition	Miscellaneous/Undefined
Boiler	5.1.1	Pressure Relieving Devices Blrs-Install	Pressure relieving device not installed
Boiler	5.1.2	Pressure Relieving Devices Blrs-Install	Inadequate relieving capacity
Boiler	5.1.3	Pressure Relieving Devices Blrs-Install	Inadequate number of relieving devises
Boiler	5.1.4	Pressure Relieving Devices Blrs-Install	Set pressure too high
Boiler	5.1.5	Pressure Relieving Devices Blrs-Install	Seals broken or missing
Boiler	5.1.6	Pressure Relieving Devices Blrs-Install	Valve body drain plug not removed
Boiler	5.1.7	Pressure Relieving Devices Blrs-Install	Valve body drain piping missing
Boiler	5.1.8	Pressure Relieving Devices Blrs-Install	Try lever missing
Boiler	5.1.9	Pressure Relieving	Try lever not accessible

Category	Deficiency Code	National Board Category	Condition
		Devices Blrs-Install	
Boiler	5.1.10	Pressure Relieving Devices Blrs-Install	Name plate missing
Boiler	5.1.11	Pressure Relieving Devices Blrs-Install	Safety valve inlet reduced
Boiler	5.1.12	Pressure Relieving Devices Blrs-Install	Safety valve out let reduced
Boiler	5.1.13.1	Pressure Relieving Devices Blrs-Install	Discharge piping is plastic
Boiler	5.1.13	Pressure Relieving Devices Blrs-Install	Discharge piping missing
Boiler	5.1.14	Pressure Relieving Devices Blrs-Install	Discharge piping not extended to a safe point of discharge
Boiler	5.1.15	Pressure Relieving Devices Blrs-Install	Threads on end of discharge line
Boiler	5.1.16	Pressure Relieving Devices Blrs-Install	More than one safety valve connected to discharge line and not increased in size
Boiler	5.1.17	Pressure Relieving Devices Blrs-Install	Discharge piping not of adequate size to accommodate the number of valves connected
Boiler	5.1.18	Pressure Relieving Devices Blrs-Install	Discharge piping not extended to within 6 inches of the floor
Boiler	5.1.19	Pressure Relieving Devices Blrs-Install	Discharge pipe to close to the floor restricting discharge
Boiler	5.1.20	Pressure Relieving Devices Blrs-Install	Discharge piping on steam boiler not extended outdoors or to a safe point of discharge
Boiler	5.1.21	Pressure Relieving Devices Blrs-Install	Discharge piping not supported
Boiler	5.1.22	Pressure Relieving Devices Blrs-Install	Incorrect type of relieving device
Boiler	5.1.23	Pressure Relieving Devices Blrs-Install	Valves installed on either side of the safety relieving device
Boiler	5.1.24	Pressure Relieving Devices Blrs-Install	Valve installed on inlet side of safety relieving devise
Boiler	5.1.25	Pressure Relieving Devices Blrs-Install	Valve installed on discharge side of safety relieving devise
Boiler	5.1.26	Pressure Relieving Devices Blrs-Install	Adjustable safety relieving devise
Boiler	5.1.27	Pressure Relieving Devices Blrs-Install	Rupture disk pressure setting too high
Boiler	5.1.28	Pressure Relieving Devices Blrs-Install	Rupture disk installed in the wrong location
Boiler	5.1.29	Pressure Relieving	Discharge pipe resting on or too close to

Category	Deficiency Code	National Board Category	Condition
		Devices Blrs-Install	the drain pan
Boiler	5.1.30	Pressure Relieving Devices Blrs-Install	Try lever not accessible
Boiler	5.1.31	Pressure Relieving Devices Blrs-Install	Safety valve installed backwards
Boiler	5.1.99	Pressure Relieving Devices Blrs-Install	Miscellaneous/Undefined
Boiler	5.2.1	Pressure Relieving Devices Blrs-Operatn	Valve leaking
Boiler	5.2.2	Pressure Relieving Devices Blrs-Operatn	Valve inoperative
Boiler	5.2.3	Pressure Relieving Devices Blrs-Operatn	Try lever inoperative
Boiler	5.2.4	Pressure Relieving Devices Blrs-Operatn	Valve corroded shut
Boiler	5.2.5	Pressure Relieving Devices Blrs-Operatn	Valve spring corroded
Boiler	5.2.6	Pressure Relieving Devices Blrs-Operatn	Discharge reduced
Boiler	5.2.7	Pressure Relieving Devices Blrs-Operatn	Discharge plugged
Boiler	5.2.8	Pressure Relieving Devices Blrs-Operatn	Valve stem bent
Boiler	5.2.9	Pressure Relieving Devices Blrs-Operatn	Valve stem broken
Boiler	5.2.10	Pressure Relieving Devices Blrs-Operatn	Improper valve for the application
Boiler	5.2.11	Pressure Relieving Devices Blrs-Operatn	Setting too high
Boiler	5.2.12	Pressure Relieving Devices Blrs-Operatn	Capacity too low
Boiler	5.2.13	Pressure Relieving Devices Blrs-Operatn	Install cables to lift safety valves by hand from the floor
Boiler	5.2.14	Pressure Relieving Devices Blrs-Operatn	Valve installed backwards
Boiler	5.2.99	Pressure Relieving Devices Blrs-Operatn	Miscellaneous/Undefined
Boiler	5.3.1	Pressure Relieving Devices Blrs-Undefined	Name plate missing
Boiler	5.3.2	Pressure Relieving Devices Blrs-Undefined	Name plate not readable
Boiler	5.3.99	Pressure Relieving Devices Blrs-Undefined	Miscellaneous/Undefined
Boiler	5.4.99	Pressure Relieving	Miscellaneous/Undefined

Category	Deficiency Code	National Board Category	Condition
		Devices Blrs-Material Cond	
Boiler	5.4.1	Pressure Relieving Devices Blrs-Material Cond	Cracking
PV	6.1.1	Pressure Vessels-Installation	Not enough clearance for maintenance, operation, inspection, or repair
PV	6.1.2	Pressure Vessels-Installation	Unauthorized welding on pressure parts
PV	6.1.3	Pressure Vessels-Installation	Inadequate supports
PV	6.1.4	Pressure Vessels-Installation	Misalignment of piping connections
PV	6.1.5	Pressure Vessels-Installation	Non code vessel
PV	6.1.99	Pressure Vessels-Installation	Miscellaneous/Undefined
PV	6.2.1	Pressure Vessels-Material Condition	Pitting
PV	6.2.2	Pressure Vessels-Material Condition	Cracking
PV	6.2.3	Pressure Vessels-Material Condition	Corrosion
PV	6.2.4	Pressure Vessels-Material Condition	Undefined material
PV	6.2.5	Pressure Vessels-Material Condition	Laminations
PV	6.2.99	Pressure Vessels-Material Condition	Miscellaneous/Undefined
PV	6.3.1	PVs-Manuf Data Report & Nameplate	No data report
PV	6.3.2	PVs-Manuf Data Report & Nameplate	Wrong data report with vessel
PV	6.3.3	PVs-Manuf Data Report & Nameplate	Data report not listing all of the openings
PV	6.3.4	PVs-Manuf Data Report & Nameplate	No national board number on name plate
PV	6.3.5	PVs-Manuf Data Report & Nameplate	Location of installation not on data report
PV	6.3.6	PVs-Manuf Data Report & Nameplate	Name plate not readable/missing/does not match vessel
PV	6.3.99	PVs-Manuf Data Report & Nameplate	Miscellaneous/Undefined
PV	6.4.1.1	PVs-Pressure Relief	Pressure relieving device not installed

Category	Deficiency Code	National Board Category	Condition
		Devices-Install	
PV	6.4.1.2	PVs-Pressure Relief Devices-Install	Inadequate relieving capacity
PV	6.4.1.3	PVs-Pressure Relief Devices-Install	Inadequate number of relieving devises
PV	6.4.1.4	PVs-Pressure Relief Devices-Install	Set pressure too high
PV	6.4.1.5	PVs-Pressure Relief Devices-Install	Seals broken or missing
PV	6.4.1.6	PVs-Pressure Relief Devices-Install	Valve body drain plug not removed
PV	6.4.1.7	PVs-Pressure Relief Devices-Install	Valve body drain piping missing
PV	6.4.1.8	PVs-Pressure Relief Devices-Install	Try lever missing
PV	6.4.1.9	PVs-Pressure Relief Devices-Install	Name plate missing
PV	6.4.1.10	PVs-Pressure Relief Devices-Install	Safety valve inlet reduced
PV	6.4.1.11	PVs-Pressure Relief Devices-Install	Safety valve out let reduced
PV	6.4.1.12	PVs-Pressure Relief Devices-Install	Discharge piping missing
PV	6.4.1.13	PVs-Pressure Relief Devices-Install	Discharge piping not extended to a safe point of discharge
PV	6.4.1.14	PVs-Pressure Relief Devices-Install	Threads on end of discharge line
PV	6.4.1.15	PVs-Pressure Relief Devices-Install	More than one safety valve connected to discharge line and not increased in size
PV	6.4.1.16	PVs-Pressure Relief Devices-Install	Discharge piping not of adequate size to accommodate the number of valves connected
PV	6.4.1.17	PVs-Pressure Relief Devices-Install	Discharge piping not extended to within 6 inches of the floor
PV	6.4.1.18	PVs-Pressure Relief Devices-Install	Discharge pipe to close to the floor restricting discharge
PV	6.4.1.19	PVs-Pressure Relief Devices-Install	Discharge piping not supported
PV	6.4.1.20	PVs-Pressure Relief Devices-Install	Incorrect type of relieving device
PV	6.4.1.21	PVs-Pressure Relief Devices-Install	Valves installed on either side of the safety relieving device
PV	6.4.1.22	PVs-Pressure Relief Devices-Install	Valve installed on inlet side of safety relieving devise

Category	Deficiency Code	National Board Category	Condition
PV	6.4.1.23	PVs-Pressure Relief Devices-Install	Valve installed on discharge side of safety relieving devise
PV	6.4.1.24	PVs-Pressure Relief Devices-Install	Adjustable safety relieving devise
PV	6.4.1.25	PVs-Pressure Relief Devices-Install	Rupture disk pressure setting too high
PV	6.4.1.26	PVs-Pressure Relief Devices-Install	Rupture disk installed in the wrong location
PV	6.4.1.27	PVs-Pressure Relief Devices-Install	Discharge pipe resting on or too close to the drain pan
PV	6.4.1.99	PVs-Pressure Relief Devices-Install	Miscellaneous/Undefined
PV	6.4.2.1	PVs-Pressure Relief Devices-Operatn	Valve leaking
PV	6.4.2.2	PVs-Pressure Relief Devices-Operatn	Valve inoperative
PV	6.4.2.3	PVs-Pressure Relief Devices-Operatn	Try lever inoperative
PV	6.4.2.4	PVs-Pressure Relief Devices-Operatn	Valve corroded shut
PV	6.4.2.5	PVs-Pressure Relief Devices-Operatn	Valve spring corroded
PV	6.4.2.6	PVs-Pressure Relief Devices-Operatn	Discharge reduced
PV	6.4.2.7	PVs-Pressure Relief Devices-Operatn	Valve stem bent
PV	6.4.2.8	PVs-Pressure Relief Devices-Operatn	Valve stem broken
PV	6.4.2.9	PVs-Pressure Relief Devices-Operatn	Improper valve for the application
PV	6.4.2.10	PVs-Pressure Relief Devices-Operatn	Discharge plugged
PV	6.4.2.99	PVs-Pressure Relief Devices-Operatn	Miscellaneous/Undefined
PV	6.4.3.1	PVs-Pressure Relief Devices-Undefined	Name plate missing
PV	6.4.3.2	PVs-Pressure Relief Devices-Undefined	Name plate not readable
PV	6.4.3.99	PVs-Pressure Relief Devices-Undefined	Miscellaneous/Undefined
PV	6.5.1	Pressure Vessels-Undefined Pressure Vessels	Non code vessel
PV	6.5.2	Pressure Vessels-	Insulation covering name plate

Category	Deficiency Code	National Board Category	Condition
		Undefined Pressure Vessels	
PV	6.5.99	Pressure Vessels-Undefined Pressure Vessels	Miscellaneous/Undefined
PV	6.6.1	Pressure Vessels-Pressure Gage	Pressure gage missing
PV	6.6.2	Pressure Vessels-Pressure Gage	No siphon or equivalent
PV	6.6.3	Pressure Vessels-Pressure Gage	Out of calibration
PV	6.6.4	Pressure Vessels-Pressure Gage	Inoperative
PV	6.6.5	Pressure Vessels-Pressure Gage	Dial not large enough
PV	6.6.6	Pressure Vessels-Pressure Gage	Pressure range not high enough
PV	6.6.7	Pressure Vessels-Pressure Gage	Pressure range too high
PV	6.6.8	Pressure Vessels-Pressure Gage	Travel range of pointer not long enough
PV	6.6.9	Pressure Vessels-Pressure Gage	No shutoff valve on the gage
PV	6.6.10	Pressure Vessels-Pressure Gage	Wrong type of shutoff valve on gage
PV	6.6.11	Pressure Vessels-Pressure Gage	Glass missing on gage face
PV	6.6.12	Pressure Vessels-Pressure Gage	Gage not visible
PV	6.6.13	Pressure Vessels-Pressure Gage	Leaking
PV	6.6.99	Pressure Vessels-Pressure Gage	Miscellaneous/Undefined
PV	6.7.1	Pressure Vessels-Water Leaks	Hand hole gaskets
PV	6.7.2	Pressure Vessels-Water Leaks	Man way gaskets
PV	6.7.3	Pressure Vessels-Water Leaks	Tubes
PV	6.7.4	Pressure Vessels-Water Leaks	Shell
PV	6.7.5	Pressure Vessels-Water Leaks	Tube sheet
PV	6.7.6	Pressure Vessels-Water	Flanges

Category	Deficiency Code	National Board Category	Condition
		Leaks	
PV	6.7.7	Pressure Vessels-Water Leaks	Threaded connections to vessel (nozzles)
PV	6.7.8	Pressure Vessels-Water Leaks	Heads
PV	6.7.9	Pressure Vessels-Water Leaks	Heat exchanger
PV	6.7.10	Pressure Vessels-Water Leaks	External piping and fittings leaking
PV	6.7.99	Pressure Vessels-Water Leaks	Miscellaneous/Undefined
Both	7.1.1	Repairs and Alter-Unqualified Organization	Does not have National Board R Stamp
Both	7.1.99	Repairs and Alter-Unqualified Organization	Miscellaneous/Undefined
Both	7.2.1	Repairs and Alterations-Unauthorized Repair	Replaced material does not match vessel material
Both	7.2.2	Repairs and Alterations-Unauthorized Repair	Wrong type of welding rod
Both	7.2.3	Repairs and Alterations-Unauthorized Repair	Welder not qualified to procedure
Both	7.2.4	Repairs and Alterations-Unauthorized Repair	Wrong procedure used in repair
Both	7.2.5	Repairs and Alterations-Unauthorized Repair	R-1/R-2 not filled out properly
Both	7.2.6	Repairs and Alterations-Unauthorized Repair	Jurisdiction not notified of repair
Both	7.2.7	Repairs and Alterations-Unauthorized Repair	Authorized inspector not involved with repair
Both	7.2.8	Repairs and Alterations-Unauthorized Repair	Wrong code or addenda used
Both	7.2.9	Repairs and Alterations-Unauthorized Repair	No stamping or name plate by repair firm
Both	7.2.10	Repairs and Alterations-Unauthorized Repair	Welds undercut
Both	7.2.11	Repairs and Alterations-Unauthorized Repair	Lack of penetration on welds
Both	7.2.99	Repairs and Alterations-Unauthorized Repair	Miscellaneous/Undefined
Both	7.3.1	Repairs and Alterations-Code Deficiencies	Non conformities in procedures
Both	7.3.2	Repairs and Alterations-Code Deficiencies	Untraceable material
Both	7.3.99	Repairs and Alterations-	Miscellaneous/Undefined

Category	Deficiency Code	National Board Category	Condition
		Code Deficiencies	
Both	7.4.1	Repairs and Alterations-Undefined	No record of repairs on vessel
Both	7.4.2	Repairs and Alterations-Undefined	Unauthorized repair/alteration
Both	7.4.99	Repairs and Alterations-Undefined	Miscellaneous/Undefined